



swisslog

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<b>Company:</b>	Swisslog Software AG
<b>Application:</b>	Supply Chain Management System
<b>Technology:</b>	Component-based distributed CORBA® system, implemented in CORBA, IDL C++
<b>Tools:</b>	Software through Pictures® (StP)/UML Architecture Component Development™ (ACD) TAO Orb, SNIFF+

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### **Description**

Swisslog is a global provider of integrated supply chain solutions that cover the entire value creation process from procurement and production to delivery. Swisslog's solutions optimize the intra- and inter-company flow of information and materials, significantly increasing its customers' flexibility, reaction capability, productivity and quality of service, while minimizing logistics costs and tied-up capital.

### **Problem**

Swisslog faced a major challenge when they embarked upon the development of a new generation of Supply Chain Management Systems. With a track record for success in this marketplace, they needed to provide a more flexible and adaptable system with increased scope and functionality required a major re-think of the software architecture and development strategy.

It was clear to the project team that simply putting the business and application requirements into UML™ models would not be an effective and efficient utilization of the resources, both from a technical and business perspective. Current round trip methods are not suited to this approach, since such an approach creates models containing implementation details that map to the code on a one to one basis and that lack a separation of application and technology requirements. Therefore, the round trip methods were ruled out as solutions.

## **Solution**

OMG's Model Driven Architecture™ (MDA) defines an approach, which separates the system functionality specification from its implementation on any specific technology platform. This way you increase the level of abstraction in the models and you can have an architecture that is language, vendor, and middleware neutral.

Swisslog wanted a set of business and domain models that were separate from the technology and implementation domain, giving them freedom to more easily adapt to new technologies and platforms. This separation of the "what" from the "how" was critical to the efficient and effective use of the project staff and enabled Swisslog to leverage appropriate domain, technical, architectural, and implementation expertise.

Aonix® Software through Pictures® (StP) was selected to address the needs for a repository-based development environment supporting UML™ and MDA™. The repository-based environment thus allowed the distributed development team to collaborate while maintaining consistency and quality across each of the development phases. Architecture Component Development™ (ACD) is the powerful transformation engine of the StP product family, which allows the mapping of UML™ models in the target environment.

Additionally, the Aonix® solution provided UML™ and tools training, consulting, and customization services that allowed Swisslog and their development partners to quickly get started and meet their time to market objectives.

## **Benefits**

**Effective and efficient utilization of resources.** The separation of domain and technical aspects allowed a very efficient utilization of resources. Only a few technology specialists developed the architectural concepts and defined the mapping rules between the models. Since there was no need for the application specialists to understand the middleware in detail, they were able to devote more time and effort to focusing on the business view.

**Increased productivity and ROI.** Application generation technology was destined to play a key role. Swisslog was not in favor of pouring a large amount of effort and time into a set of models for which very little could be automatically transformed into the application. Only the ACD approach with Software through Pictures provided the desired application and implementation separation. Compact domain models were produced, and significantly more source code was automatically generated.

**Increased quality and standards consistency.** A mechanism to implement cross-project standards such as interprocess communication, class persistence, and quality standards was needed, alongside a clear objective to have complete control over what is automatically generated from the models. ACD provided this flexibility through a series of templates that captured the architecture, interfaces, and technical implementation details. Swisslog's experiences with StP and the ACD template-based approach to code

generation are that the quality of the software is much higher. The whole team is focussed on quality.

Since a large part of the application is automatically generated and common aspects such as persistence, interprocess communication, and implementation-language details are captured in ACD™ templates, there is greater consistency. The entire team uses the technology in the same way. Fewer bugs are therefore introduced. Project and company standards are easier to implement and can be automatically adhered to since the generation ensures conformance.

## **Value**

**Time to market!** The result for Swisslog is a new system that now enables faster, more cost-effective deployment of their application. The new 'AutomationManager' is a set of real-time control systems that provides all the components of warehouse logistical automation. The system can be tailored with configuration, rather than customization, and is designed to be extremely flexible. An XML-based rules mechanism enables the system to be configured to meet customer specific requirements.

A three man month deployment now takes just one month. The new system is more user and customer focused. Largely because the domain models are uncluttered, smaller, easier to maintain, and simpler to update. Other platforms and databases are being considered.

***"The MDA™ approach made it much easier to put new people onto the project with different skills and become more productive more quickly. It was the only way to get that many people with all the new technologies up to speed in a short space of time". (Swisslog).***

***"We could not have done this without Aonix® ACD™". (Swisslog)***

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